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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
ADDY, ANTHONY S	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/723,138	LI, KEVIN	
	Examiner	Art Unit	
	Anthony S. Addy	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to applicant's request filed on August 17, 2006 for reconsideration of the finality of the rejection of the last Office action and, therefore, the finality of that action is withdrawn. Prosecution is hereby reopened. New grounds of rejections are set forth below. **Claims 1-24** are pending in the present application.

Response to Arguments

2. Applicant's arguments with respect to **claims 1-24** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by **Hong, U.S. Publication Number 2003/0125078 A1 (hereinafter Hong)**.

Regarding claims 1 and 22, Hong teaches a system that effectuates receive diversity within a mobile communication device (see abstract, p. 1 [0015] and p. 2 [0016-0017]), comprising: a first antenna that facilitates reception of signals in at least

one of a PCS band, a cellular band, a Korean PCS band, and a China PCS band (see p. 2 [0026-0027 & 0031] and Fig. 3; shows a first multiband antenna 310 that facilitates reception of signals in at least CDMA band and a GPS band); and a second antenna that facilitates reception of signals in a GPS band and at least one of the bands received by the first antenna (see p. 2 [0026-0027 & 0031] and Fig. 3; shows a second multiband antenna 312 that facilitates reception of signals in a GPS band and at least one of the bands received by the first antenna 310 [i.e. the CDMA band]), wherein tuning of the second antenna depends upon a signal type relayed to the second antenna (see p. 2 [0028-0029] and p. 3 [0032] [i.e. the limitations "wherein tuning of the second antenna depends upon a signal type relayed to the second antenna" is met by the teaching of Hong that the first and second antennas are designed to receive RF signals having different polarization characteristics, that is, the first antenna has one or more reception polarization characteristics, and the second antenna has one or more second reception polarization characteristics distinguished from the first reception polarization characteristics]).

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 2, 5, 6, 8, 9, 11, 13, 16, 17, 20, 21, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hong, U.S. Publication Number**

2003/0125078 A1 (hereinafter Hong) and further in view of **Enoki, U.S. Patent Number 6,014,571 (hereinafter Enoki)**.

Regarding claims 1, 16, 17, 21, 22 and 24, Hong teaches a system and method for effectuating receive diversity within a mobile communication device (see abstract, p. 1 [0015] and p. 2 [0016-0017]), comprising: providing a mobile communication device that includes a first antenna tuned to receive a signal in at least one of a PCS band, a cellular band, a Korean PCS band, and a China PCS band (see p. 2 [0026-0027 & 0031] and Fig. 3; shows a first multiband antenna 310 that facilitates reception of signals in at least CDMA band and a GPS band), and a second antenna tuned to receive a signal in a GPS band and at least one of the bands received by the first antenna (see p. 2 [0026-0027 & 0031] and Fig. 3; shows a second multiband antenna 312 that facilitates reception of signals in a GPS band and at least one of the bands received by the first antenna 310 [i.e. the CDMA band]), wherein tuning of the second antenna depends upon a signal type relayed to the second antenna (see p. 2 [0028-0029] and p. 3 [0032] [i.e. the limitations "wherein tuning of the second antenna depends upon a signal type relayed to the second antenna" is met by the teaching of Hong that the first and second antennas are designed to receive RF signals having different polarization characteristics, that is, the first antenna has one or more reception polarization characteristics, and the second antenna has one or more second reception polarization characteristics distinguished from the first reception polarization characteristics]).

Hong further teaches coupling the first and second antennas to a switch 340 (see p. 2 [0026-0028] and Fig. 3), but fails to explicitly teach coupling the second antenna to a first switch; further coupling the first switch to one of a first tuning circuit that facilitates tuning the second antenna for reception of a signal in a GPS band and a second tuning circuit that facilitates tuning the second antenna for reception of a signal in at least one of the bands received by the first antenna; coupling the second antenna to a second switch; and further coupling the second switch to one of a first receiving component that facilitates one of processing, transduction, and modulation of a signal in a GPS band and a second receiving component that facilitates one of processing, transduction, and modulation of a signal in at least one of the bands received by the first antenna.

In an analogous field of endeavor, Enoki teaches an antenna diversity receiving system and method for receiving first and second radio wave signals transmitted from first and second mobile unit communication systems, said first and second radio wave signals having first and second carrier frequencies respectively (see abstract, col. 9, lines 43-53 and Fig. 10), comprising: coupling the second antenna to a first switch (see col. 3, line 65 through col. 4, line 13, col. 7, lines 33-41, col. 9, lines 43-57 and Figs. 5 & 10); further coupling the first switch to one of a first tuning circuit that facilitates tuning the second antenna for reception of a signal in a second carrier frequency and a second tuning circuit that facilitates tuning the second antenna for reception of a signal in at least one of the bands received by the first antenna (see col. 3, line 65 through col. 4, line 13, col. 7, lines 33-41, col. 9, lines 43-57 and Figs. 5 & 10); coupling the second antenna to a second switch (see col. 3, line 65 through col. 4, line 13, col. 7, lines 33-

41, col. 9, lines 43-57 and Figs. 5 & 10) ; and further coupling the second switch to one of a first receiving component that facilitates one of processing, transduction, and modulation of a signal in a second carrier frequency and a second receiving component that facilitates one of processing, transduction, and modulation of a signal in at least one of the bands received by the first antenna (see col. 3, line 65 through col. 4, line 13, col. 7, lines 33-41, col. 9, lines 43-57 and Figs. 5 & 10).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Hong with the teachings of Enoki to include a system and method, comprising: a first and second switch coupled to a first and second antenna, in order to switch between the first and second antennas by generating an antenna switching signal in accordance with a signal receiving level detected by a signal receiving level detection circuit and to thus enable a favorable receiving characteristic even in a phasing condition as per the teachings of Enoki (see col. 9, lines 43-57).

Regarding claims 2, 13 and 20, Hong in view of Enoki teaches all the limitations of claims 1 and 17. Hong in view of Enoki further teaches a mobile telephone (see *Hong*, p. 2 [0025] and Fig. 3), further comprising tuning the second antenna to receive a signal in a GPS band if a signal in a GPS band is desirably received by the second antenna (see *Hong*, p. 2 [0026-0030] and *Enoki*, col. 9, lines 43-57).

Regarding claim 5, Hong in view of Enoki teaches all the limitations of claim 1. Hong in view of Enoki further teaches a system, further comprising: a first tuning component that facilitates tuning the second antenna for reception of signals in a GPS band; and a second tuning component that facilitates tuning the second antenna for

reception of signals in at least one of the bands received by the first antenna (see *Hong*, p. 2 [0026-0031] and *Enoki*, col. 7, lines 33-61, col. 9, lines 43-57).

Regarding claim 6, Hong in view of Enoki teaches all the limitations of claim 5. Hong in view of Enoki further teaches a system, further comprising a RF switch that facilitates coupling the second antenna to one of the first tuning component and the second tuning component (see *Enoki*, col. 7, lines 33-61 and col. 9, lines 43-57).

Regarding claim 8, Hong in view of Enoki teaches all the limitations of claim 1. Hong in view of Enoki further teaches a system, further comprising: a first receiving component that facilitates at least one of transduction, modulation, and processing of a signal in at least one of the bands received by the first antenna; and a second receiving component that facilitates at least one of transduction, modulation, and processing of a GPS signal (see *Hong*, p. 2 [0026-0031] and *Enoki*, col. 7, lines 33-61, col. 9, lines 43-57).

Regarding claim 9, Hong in view of Enoki teaches all the limitations of claim 8. Hong in view of Enoki further teaches a system, further comprising a RF switch that facilitates coupling the second antenna to one of the first receiving component and the second receiving component (see *Enoki*, col. 7, lines 33-61 and col. 9, lines 43-57).

Regarding claim 11, Hong in view of Enoki teaches all the limitations of claim 1. Hong in view of Enoki further teaches a system, further comprising a component that determines frequency of a signal desirably received by the second antenna (see *Hong*, p. 2 [0026-0031]).

7. Claims 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hong, U.S. Publication Number 2003/0125078 A1 (hereinafter Hong)** and **Enoki, U.S. Patent Number 6,014,571 (hereinafter Enoki)** as applied to claims 5 and 9 above, and further in view of **Braun et al., U.S. Patent Number 6,980,782 (hereinafter Braun).**

Regarding claims 7 and 10, Hong in view of Enoki teaches all the limitations of claims 5 and 9. Hong in view of Enoki further teaches a system, the RF switch being one of a PIN-diode, a MEMS switch, and a FET switch.

In an analogous field of endeavor, Braun teaches an antenna device for transmitting and receiving radio frequency waves installable in a communication device includes an antenna structure switchable between antenna configuration states, wherein an antenna switching unit may be PIN diode switches, GaAs field effect transistors (FET), or microelectromechanical system (MEMS) switches (see abstract, col. 11, lines 15-24 and Fig. 7a).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to modify Hong and Enoki with Braun, wherein the RF switch is one of a PIN-diode, a MEMS switch, and a FET switch, in order to electrically connect and disconnect antenna elements in parallel or in series with each other, or completely connect or disconnect one or more antenna elements to ground as taught by Braun (see col. 11, lines 15-24).

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Hong, U.S. Publication Number 2003/0125078 A1 (hereinafter Hong)** and **Enoki, U.S. Patent Number 6,014,571 (hereinafter Enoki)** as applied to claim 1 above, and further in view of **Balchunas et al., U.S. Publication Number 2006/0097171 A1 (hereinafter Balchunas).**

Regarding claim 12, Hong in view of Enoki teaches all the limitations of claim 1. Hong in view of Enoki fails to explicitly teach a system, further comprising an emergency component that automatically configures the second antenna to receive a GPS signal upon transmitting data to an emergency number.

In an analogous field of endeavor, Balchunas teaches a GPS enabled wireless personal communication device, further comprising an emergency component that automatically configures the second antenna to receive a GPS signal upon transmitting data to an emergency number (see p. 5 [0045 & 0047] and Fig. 3; shows an automatic dialer 335 [i.e. reads on emergency component] that automatically configures antenna 375 to receive a GPS signal).

It would therefore have been obvious to one of ordinary skill in the art at the of the invention to modify Hong and Enoki with the teachings of Balchunas, in order to enable various communications without user interface, such as autodialing using an automatic dialer module to dial the number of an emergency response center to report pertinent information regarding radiation levels and provide location specific information as taught by Balchunas (see p. 5 [0044-0048]).

9. Claims 3, 4, 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hong, U.S. Publication Number 2003/0125078 A1 (hereinafter Hong)** and **Enoki, U.S. Patent Number 6,014,571 (hereinafter Enoki)** as applied to claims 1 and 22 above, and further in view of **Eggleston, U. S. Patent Number 6,414, 640 (hereinafter Eggleston)**.

Regarding claims 3, 4, 15 and 23, Hong in view of Enoki teaches all the limitations of claims 1 and 22. Hong in view of Enoki fails to explicitly teach the second antenna is a top-mounted inverted F-antenna and the inverted F-antenna exhibits circular polarization characteristics.

However, the use of a top-mounted inverted F-antenna exhibiting circular polarization characteristics is very well known in the art as taught for example by Eggleston. Eggleston teaches a top-mounted inverted F-antenna (TOPIFA) used in a mobile station, and wherein the top-mounted inverted F-antenna assembly exhibits circular polarization characteristics (see col. 3, lines 35-47, col. 3, lines 64-67, col. 5, lines 39-52 and Fig. 3). According to Eggleston, the antenna assembly is used in a mobile station operable pursuant to conventional cellular operation as well as to receive GPS signals used for positioning purposes and because of the circular polarization characteristics of the resultant antenna transducer, a relatively high antenna gain characteristic is provided by the antenna transducer (see col. 6, lines 29-41).

It would therefore have been obvious to one of ordinary skill in the art at the time of the invention to implement the antenna assembly of Eggleston in the communication

system of Hong and Enoki, in order to realize a relatively high antenna gain characteristic.

10. Claims 14, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hong, U.S. Publication Number 2003/0125078 A1 (hereinafter Hong)** and **Enoki, U.S. Patent Number 6,014,571 (hereinafter Enoki)** as applied to claims 1 and 17 above, and further in view of **Well Known Prior Art – Official Notice**.

Regarding claims 14, 18 and 19, Hong in view of Enoki teaches all the limitations of claims 1 and 17. Hong in view of Enoki fails to explicitly teach a radiating element that is coupled to a transmission line, wherein length of the transmission line is selectable between at least two lengths and altering an electrical length of a resonating element associated with the second antenna to tune the second antenna.

However, the examiner takes Official Notice that it is very well known in the art to alter or vary the length of a transmission line coupled to an antenna element for tuning purposes of the antenna. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to alter or vary the length of a transmission line coupled to an antenna of Hong and Enoki, to tune the multiple antennas to operate in a desired band.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Marrah et al., U.S. Publication Number 2006/0194562 A1 discloses satellite receiver system.

Leinonen et al., U.S. Publication Number 2006/0152408 A1 discloses performance of a receiver in interfering conditions.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony S. Addy whose telephone number is 571-272-7795. The examiner can normally be reached on Mon-Thur 8:00am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc M. Nguyen can be reached on 571-272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A.S.A

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